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09/753,332	12/29/2000	Joshua Coates	SCAL.P0007	8411

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EXAMINER

HWANG, JOON H

ART UNIT	PAPER NUMBER
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2172

17

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/753,332

Applicant(s)

COATES, JOSHUA

Examiner

Joon H. Hwang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

1. The applicants amended claims 1, 11, and 21 in the amendment received on 7/26/04.

The pending claims are 1-30.

Response to Arguments

2. Applicant's arguments filed in the amendment received on 7/26/04 have been fully considered but they are not persuasive.

The applicants added in claim 1 the limitations of a network interconnecting the DOSMs and the storage nodes, in claim 11 a storage node having multiple storage devices and DOSMs remote from the storage nodes via an interconnection over the network, and in claim 21 a first directory remote from a requesting client and from an associated intelligent storage node for storing file system information associated with the intelligent storage node having multiple storage devices. These limitations are addressed in the following rejection.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1, 2, 4-7, 11, 12, 14-17, 21, 22, and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iskiyan et al. (U.S. Patent No. 5,692,155) in view of

Kern et al. (U.S. Patent No. 5,870,537), and further in view of Bergsten (U.S. Patent No. 6,360,306).

With respect to claim 1, Iskiyan discloses providing a plurality of distributed storage controllers, which teach object storage managers "DOSMs", for receiving requests for files (fig. 1 and fig. 5). Iskiyan discloses providing at least three storages (intelligent storage nodes) accessible to the storage controllers (DOSMs) over a communication link (fig. 1, fig. 5, and line 41 in col. 7 thru line 13 in col. 8). Iskiyan discloses storing a file in a first storage (a first intelligent storage node) having multiple storage devices, accessed via a network and a duplicate of the file in a second storage (a second intelligent storage node) having multiple storage devices, accessed via a storage controller (a DOSM) over the communication link (abstract, fig. 1, lines 41-67 in col. 7, and lines 1-13 in col. 8). Iskiyan discloses raising a long busy signal (entering a failover condition) to cease use of the first storage (abstract). Iskiyan discloses the first and second storages have the same volume serial numbers for data (lines 13-39 in col. 2). Iskiyan is silent on accessing the second storage for a subsequent file request. However, Kern discloses a switching operation that switches the direction of the request from the first storage to the second storage (abstract, fig. 5, lines 50-67 in col. 4, and lines 1-25 in col. 5). Kern discloses directing subsequent file requests to the second storage (lines 40-63 in col. 5), which teaches determining a location for files in the second storage. Therefore, based on Iskiyan in view of Kern, it would have been obvious to one having ordinary skill in the art at the time the invention was made to access and determine a location for a file in the second storage for continuing and

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completing file requests regardless of a system failure. Iskiyan and Kern are silent on a network between storage nodes and storage controllers (DOSMs). However, Bergsten discloses SCSI protocols for a communication link between storage nodes and controllers (DOSMs) (fig. 1 and lines 37-55 in col. 4). Bergsten discloses the communication link between the storage nodes and the storage controllers can be replaced with other protocols and standards, such as Fiber Channel (lines 37-55 in col. 4). Bergsten discloses either an Ethernet link or a shared bus can be used for a communication link (lines 45-54 in col. 18). Bergsten discloses locating storage nodes geographically remote by using a LAN network in order to prevent natural disaster (lines 25-40 in col. 1 and lines 36-67 in col. 3). These teach a network, such as LAN, can be used for the communication link interconnecting the storage nodes and the storage controllers (DOSMs), wherein the storage controllers can be remote from the storage nodes. Bergsten also discloses multiple backup copies for quick and easy access of data to any backup copy (fig. 1, lines 25-40 in col. 1, and lines 15-35 in col. 3). Bergsten discloses identifying a second storage node as a location of a file in case of a failover of a first storage node (line 65 in col. 5 thru line 2 in col. 6 and line 45 in col. 8 thru line 22 in col. 11) for recovery. Therefore, based on Iskiyan in view of Kern, and further in view of Bergsten, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a network between storage controllers (DOSMs) and storage nodes for locating geographically remote in order to prevent natural disaster.

With respect to claim 2, Kern discloses a device address (a network address) for the first storage (first intelligent storage node) and the second storage (second intelligent storage node, abstract, lines 65-67 in col. 4, and lines 1-25 in col. 5) for directing subsequent file requests to a designated storage.

With respect to claim 4, Iskiyan discloses storing a file in the first storage located in a primary system (a first storage center) and storing the file in the second storage located in a secondary system (a second storage center), which is geographically remote from the primary system (fig. 1, fig. 5, and lines 40-51 in col. 2).

With respect to claim 5, Iskiyan discloses storing a plurality of files in a plurality of storages (intelligent storage nodes) in the primary system (the first storage center) and storing duplicates of the files in a plurality of storages (intelligent storage nodes) in the secondary system (the second storage center, fig. 1 and fig. 5). Iskiyan discloses the storages in the primary and secondary systems have the same volume serial numbers for data (lines 13-39 in col. 2), which teaches a one to one mapping between storages in the two systems (fig. 1 and fig. 5).

With respect to claim 6, Iskiyan discloses storing a file in the first storage (the first intelligent storage node) located in a system and storing the file in the second storage (the second intelligent storage node) located in the system (fig. 5).

With respect to claim 7, Iskiyan discloses storing a file in a primary system (a first storage center) having storages (intelligent storage nodes) and storing a duplicate of the file in a secondary system (a second storage center), which is geographically remote from the primary system (fig. 1, fig. 5, and lines 40-51 in col. 2). Iskiyan discloses

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raising a long busy signal (entering a failover condition) to cease use of the first storage (abstract). Iskiyan discloses the first and second storages have the same volume serial numbers for data (lines 13-39 in col. 2). Kern discloses a switching operation that switches the direction of the request from the first storage to the second storage (abstract, fig. 5, lines 50-67 in col. 4, and lines 1-25 in col. 5). Kern discloses directing subsequent file requests to the second storage (lines 40-63 in col. 5), which teaches determining a location for files in the second storage and searching for the files in the second storage, for continuing and completing file requests regardless of a system failure.

With respect to claim 11, Iskiyan discloses data/records (abstract and lines 15-29 in col. 1), which teaches files and directories. Therefore, the limitations of claim 11 are rejected in the analysis above of claim 1, and the claim is rejected on that basis.

The limitations of claim 12 are rejected in the analysis above of claim 2, and the claim is rejected on that basis.

The limitations of claim 14 are rejected in the analysis above of claim 4, and the claim is rejected on that basis.

The limitations of claim 15 are rejected in the analysis above of claim 5, and the claim is rejected on that basis.

The limitations of claim 16 are rejected in the analysis above of claim 6, and the claim is rejected on that basis.

The limitations of claim 17 are rejected in the analysis above of claim 7, and the claim is rejected on that basis.

With respect to claim 21, Iskiyan discloses a first storage controller (a first directory) accessed via a network for storing file system information associated with an intelligent storage node having multiple storage devices, a second storage controller (a second directory) accessed via a network for storing duplicate of the file system information, and at least one processor concerning a distributed directory manager (abstract, fig. 1, lines 41-67 in col. 7, and lines 1-13 in col. 8). Iskiyan discloses raising a long busy signal (entering a failover condition) to cease use of the first storage (abstract). Iskiyan discloses the first and second storages have the same volume serial numbers for data (lines 13-39 in col. 2). Iskiyan is silent on accessing the second storage for a subsequent file request. However, Kern discloses a switching operation that switches the direction of the request from the first storage to the second storage when a failure occurs on the first storage and from a first storage controller to a second storage controller when a failure occurs on the first storage controller (abstract, fig. 5, lines 50-67 in col. 4, and lines 1-25 in col. 5). Kern discloses directing subsequent file requests to the second storage (lines 40-63 in col. 5) via the second storage controller, which teaches determining a location for the file system information in the second storage. Therefore, based on Iskiyan in view of Kern, it would have been obvious to one having ordinary skill in the art at the time the invention was made to access and determine a location for file system information in the second storage via the second storage controller for continuing and completing file requests regardless of a system failure. Iskiyan and Kern are silent on a network between a storage node and a storage controller (directory). However, Bergsten discloses SCSI protocols for a communication

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link between storage nodes and controllers (fig. 1 and lines 37-55 in col. 4). Bergsten discloses the communication link between the storage nodes and the storage controllers can be replaced with other protocols and standards, such as Fiber Channel (lines 37-55 in col. 4). Bergsten discloses either an Ethernet link or a shared bus can be used for a communication link (lines 45-54 in col. 18). Bergsten discloses locating storage nodes geographically remote by using a LAN network in order to prevent natural disaster (lines 25-40 in col. 1 and lines 36-67 in col. 3). These teach a network, such as LAN, can be used for the communication link interconnecting the storage nodes and the storage controllers, wherein the storage controllers can be remote from the storage nodes. Bergsten also discloses multiple backup copies for quick and easy access of data to any backup copy (fig. 1, lines 25-40 in col. 1, and lines 15-35 in col. 3). Bergsten discloses identifying a second storage node and/or controller as a location of a file or file system information in case of a failover of a first storage node and/or controller (fig. 1, fig. 2, line 65 in col. 5 thru line 2 in col. 6, and line 45 in col. 8 thru line 22 in col. 11) for recovery. Bergsten discloses a host computer system comprising at least one storage controller can be a server for one or more client computer systems (lines 1-6 in col. 4 and fig. 1), which teaches a storage controller is remote from a requesting client. Bergsten also discloses a storage controller, other storage controllers, host computer systems, and storage nodes can be remotely located at distant locations (lines 16-25 in col. 4). Therefore, based on Iskiyan in view of Kern, and further in view of Bergsten, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a network between storage

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controllers and storage nodes for locating geographically remote in order to prevent natural disaster.

With respect to claim 22, Kern discloses a device address (a network address) for a storage device (abstract, lines 65-67 in col. 4, and lines 1-25 in col. 5) in order to locate the storage device and a channel (address) of a storage controller to a processor (fig. 1, lines 40-56 in col. 13, and lines 10-30 in col. 8). The limitations of claim 22 are rejected in the analysis of claim 21 above, and the claim is rejected on that basis.

With respect to claim 24, Iskiyan teaches a first storage center (a primary system) comprising the first storage controller (the first directory) and a second storage center (a secondary system), which is geographically remote from the first storage center (the primary system), comprising the second storage controller (fig. 1, fig. 5, and lines 40-51 in col. 2).

With respect to claim 25, Iskiyan teaches the first storage center (the primary system) comprising file system information stored in a plurality of directories (storage controllers) and the second storage center (the secondary system) comprising a duplicate of the file system information stored in a plurality of directories (storage controllers, fig. 1 and fig. 5). Iskiyan discloses the storages in the primary and secondary systems have the same volume serial numbers for data (lines 13-39 in col. 2), which teaches a one to one mapping between storages and storage controllers in the two systems (fig. 1 and fig. 5).

With respect to claim 26, Iskiyan teaches the first and second directories (storage controllers) in a single storage center (a system, fig. 5).

With respect to claim 27, Iskiyan teaches a first storage center (a primary system) comprising the first storage controller (the first directory) and a second storage center (a secondary system), which is geographically remote from the first storage center (the primary system), comprising the second storage controller (fig. 1, fig. 5, and lines 40-51 in col. 2). The limitations of claim 27 are rejected in the analysis of claim 21 above, and the claim is rejected on that basis.

5. Claims 3, 13, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iskiyan et al. (U.S. Patent No. 5,692,155) in view of Kern et al. (U.S. Patent No. 5,870,537) and Bergsten (U.S. Patent No. 6,360,306), and further in view of Mogul (RFC0917 : Internet subnets, 1984, ACM, pages 1-17).

With respect to claim 3, Iskiyan discloses the first and the second storages and the first and the second storage controllers in the same system (fig. 5). Iskiyan, kern, and Bergsten are silent on Internet protocol (IP) network address and difference in a subnet portion of the IP network address. However, Mogul discloses IP address (pages 17-18) and a subnet as a subnet of a single Internet network (pages 3-7), which teaches the subnet is a local in the single Internet network. Therefore, based on Iskiyan in view of Kern and Bergsten, and further in view of Mogul, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilizes a storage and a duplicate storage in the same system, thus only subnet portion of IP addresses are different, for the discretion of a user.

The limitations of claims 13 and 23 are rejected in the analysis above of claim 3, and the claim is rejected on that basis.

6. Claims 18 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iskiyan et al. (U.S. Patent No. 5,692,155) in view of Kern et al. (U.S. Patent No. 5,870,537) and Bergsten (U.S. Patent No. 6,360,306), and further in view of Miller (U.S. Patent No. 5,506,984).

With respect to claim 18, Iskiyan, Kern, and Bergsten are silent on searching for the file in a first storage center if the file is not located in a second storage center. However, Miller discloses searching another database for data if the data is not located in a searched database and continuing searching the other databases for the data until the data is located (abstract, fig. 5, and lines 10-51 in col. 14). Therefore, based on Iskiyan in view of Kern and Bergsten, and further in view of Miller, it would have been obvious to one having ordinary skill in the art at the time the invention was made to search the file in other storage center or storages in order to locate the file.

With respect to claim 28, Iskiyan, Kern, and Bergsten are silent on searching for the file system information in a first storage center if the file system information is not located in a second storage center. However, Miller discloses searching another database for data if the data is not located in a searched database and continuing searching the other databases for the data until the data is located (abstract, fig. 5, and lines 10-51 in col. 14). Therefore, based on Iskiyan in view of Kern and Bergsten, and further in view of Miller, it would have been obvious to one having ordinary skill in the art

at the time the invention was made to search the file system information in other storage center in order to locate the file system information.

7. Claims 9, 19, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iskiyan et al. (U.S. Patent No. 5,692,155) in view of Kern et al. (U.S. Patent No. 5,870,537) and Bergsten (U.S. Patent No. 6,360,306), and further in view of Gayman (U.S. Patent No. 6,256,673).

With respect to claim 9, Iskiyan, Kern, Bergsten are silent on searching for the file using a multi-cast protocol. However, Gayman discloses a multi-cast protocol for requesting (figs. 1-4 and lines 19-61 in col. 6). Therefore, based on Iskiyan in view of Kern and Bergsten, and further in view of Gayman, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a multi-cast protocol for requesting for the discretion of a user.

The limitations of claim 19 are rejected in the analysis above of claim 9, and the claim is rejected on that basis.

With respect to claim 29, Iskiyan, Kern, Bergsten are silent on searching for the file system information using a multi-cast protocol. However, Gayman discloses a multi-cast protocol for requesting (figs. 1-4 and lines 19-61 in col. 6). Therefore, based on Iskiyan in view of Kern and Bergsten, and further in view of Gayman, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a multi-cast protocol for requesting for the discretion of a user.

8. Claims 8, 10, 20, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iskiyan et al. (U.S. Patent No. 5,692,155) in view of Kern et al. (U.S. Patent No. 5,870,537 and Bergsten (U.S. Patent No. 6,360,306), and further in view of Microsoft Press (Computer Dictionary Third Edition, 1997, Microsoft Press, page 377).

With respect to claim 8, Iskiyan discloses a link between a storage controller (a distributed object storage manager, DOSM) and a storage (an intelligent storage node, fig. 1, fig. 5, lines 41-67 in col. 7, and lines 1-13 in col. 8). Kern discloses directing subsequent file requests to the second storage (lines 40-63 in col. 5). Iskiyan, Kern, Bergsten are silent on a point-to-point protocol between the storage controller and the storage. However, Microsoft Press discloses a point-to-point protocol for a data link. Therefore, based on Iskiyan in view of Kern and Bergsten, and further in view of Microsoft Press, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a point-to-point protocol between the storage controller (the DOSM) and the storage (the intelligent storage node) to search the file in the storage for the discretion of a user.

The limitations of claims 10 and 20 are rejected in the analysis above of claim 8, and these claims are rejected on that basis.

With respect to claim 30, Iskiyan discloses a link between a storage controller (a directory) and a storage (an intelligent storage node) and between the storage controller and a processor, (fig. 1, fig. 5, lines 41-67 in col. 7, and lines 1-13 in col. 8). Kern discloses directing subsequent file requests to the second storage (lines 40-63 in col. 5)

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via a second storage controller. Iskiyan, Kern, Bergsten are silent on a point-to-point protocol between the storage controller and the processor. However, Microsoft Press discloses a point-to-point protocol for a data link. Therefore, based on Iskiyan in view of Kern and Bergsten, and further in view of Microsoft Press, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a point-to-point protocol between the storage controller (the directory) and processors to search the file system information in the storage controller for the discretion of a user.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joon H. Hwang whose telephone number is 703-305-6469. The examiner can normally be reached on 9:30-6:00(M~F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN E BREENE can be reached on 703-305-9790. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Joon Hwang
8/27/04



JEAN M. CORRIELLUS
PRIMARY EXAMINER